

# FLIGHT

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AIRSHIPS

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## Flight

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### "FLIGHT" PHOTOGRAPHS.

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### DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

1928

- Jan. 6 .... Federation Aeronautique Internationale Conference, Paris.
- Feb. 1 .... "Aircraft in Small Wars." Wing-Comdr. R. H. Peck, before Royal United Services Inst.
- Aug. 6 .... Air League Challenge Cup
- Sept. — .... Schneider Trophy Race.
- Oct. 7-28 .... International Aircraft Exhibition, Berlin.

1929

- Oct. 31 .... Guggenheim Safe-Aircraft Competition Closes.

## EDITORIAL COMMENT



"FLIGHT" has, ever since the earliest days of flying, been opposed, as a matter of principle, to anything in the nature of a "stunt," using the expression in the sense of something done to attract attention to the person or persons concerned, but fulfilling no useful purpose. The senseless "wing-walking" stunts so popular in some countries come under this category. Flying under the Arc de Triomphe is another. And one could enumerate countless others. When, therefore, we publish this week an article by Herr Gerhard Fieseler on "Aerobatics," we do so because we regard the evolutions carried out by that famous German pilot as something ranking a very long way higher than mere "stunts," although for brevity we have used the word "stunt" in the article as a translation of the German word *Figur*, since it was thought that, the word having unfortunately got into the English language, it would perhaps be better understood than a literal translation of some of the expressions used in the original German text by Herr Fieseler.

Let it be admitted at once that Herr Fieseler's "stunts" deserve the name to this extent that they are spectacular. It is no use trying to deny it. They are very spectacular, as those who have seen his low rolls and loops will admit. But as the author of the article, and inventor of many of the new "figures," points out, there are certain evolutions the accurate carrying out of which can be guaranteed, and which are not therefore, dangerous to carry out at a low height. There are others which cannot always be guaranteed to be carried out perfectly, and these should always be done at a safe height, and well away from the public enclosures.

By way of an example of how Herr Fieseler's work differs from many purely "stunt" exhibitions, we may mention that recently he has been carrying out his evolutions with a special cinematographic camera mounted on his machine in such a way that during the "aerobatics" a film is taken which afterwards shows what deflection, if any, of the wings takes place during any particular manoeuvre. From

these deflections it is possible to calculate the stresses, and thus some extremely valuable information is made available, information which could not be obtained in any other way than by "stunting the machine hard," as the saying is.

In his article, Herr Fieseler states that his Raab-Katzenstein "Schwalbe" has a factor of safety of 14. It seems quite likely that this is not strictly necessary, but until accurate stress estimates can be made, it is necessary to take as one's motto: "Safety first." At present, the estimation of stresses under some of the conditions met with in "aerobatics" is little better than guesswork, and we submit that if Herr Fieseler succeeds in ascertaining some of the worst of these stresses, and the effect of violent manoeuvres on the pilot, he is doing something which, in addition to its spectacular character, will be of very real benefit to the science of designing aircraft structures.

One might ask what is the use of putting a machine into these abnormal attitudes anyway. The answer is that, in the first place, during air fighting, it is often necessary in order to avoid an opponent, or to get into a favourable position in relation to an opponent, to carry out manoeuvres of an unusual nature, and if the pilot is doubtful as to whether his machine will stand this or that manoeuvre, he will be less willing to attempt it than if he knows from practical experience that not only is his machine capable of it, but that he personally, as a result of practice, knows exactly how to carry it out. Secondly, even a commercial aeroplane not normally called upon to stand violent manoeuvres may, owing to weather conditions such as fog, clouds and "bumps," be thrown into

an abnormal attitude. We had a striking example of this recently during Hinkler and McIntosh's flight to Poland, when their Fokker, heavily loaded as it was, fell from about 5,000 ft. to two or three hundred, probably in a spin, without the pilots being able to steady it because of the lack of a visible horizon. Thus it is not difficult to see very practical uses in the aerobatics demonstrated by Herr Fieseler, and we personally should like the Royal Aero Club to invite him to this country during the coming season to give a demonstration. As an attraction, the spectacular side of his evolutions would doubtless be a successful "draw," while pilots would learn much from watching him. The result might be that our R.A.F. pilots would start to do the same evolutions *in formation*, which would be a rather hair-raising spectacle, but then they will probably do that anyway!

There is a rather good story told of Costes, the famous French pilot, in connection with Herr Fieseler. Another French pilot, we believe it was Doret, was returning from the Zürich meeting, and at one of the French aerodromes he met Costes. Relating the match between himself and Fieseler at Zurich, Doret suggested that Costes should try to get up a match with Fieseler. To which Costes replied that he had already had two matches with Fieseler, in one of which Fieseler shot him in the foot! They were both pilots on the Macedonian front during the war. At the Amsterdam Show in 1919 Major Chris Draper challenged a rival to an air duel with machine guns. This did not come off, mainly because Draper insisted on using actual ammunition and not blanks! A duel in aerobatics would be no poor substitute, so what about a match between a British pilot and Herr Fieseler?



[ " FLIGHT " Photograph ]

**AERIAL "TRAMPS":** Wintry weather delayed the start from Stag Lane, last week, of two D.H.9 machines for the East. Piloted by F/O Newall and F/O Vintcent, respectively, the two machines will make a survey tour to Singapore, with the object of discovering and operating air routes of medium range between inaccessible but busy centres. Mrs. Wise Parker, seen in the centre of the group, has booked a trip as far as Cairo. The two engineers are Mr. Childs and Mr. King, respectively, the former being official photographer to the expedition.

## "AEROBATICS"

By GERHARD FIESELER

[In using the expression "stunt" in this article, we do so merely for the sake of convenience and brevity. Of "stunts," in the usual sense of the word, we have always disapproved, but the work carried out by Herr Fieseler has a very real practical value, and the fact that most of his evolutions are at the same time spectacular is to us of secondary interest.]

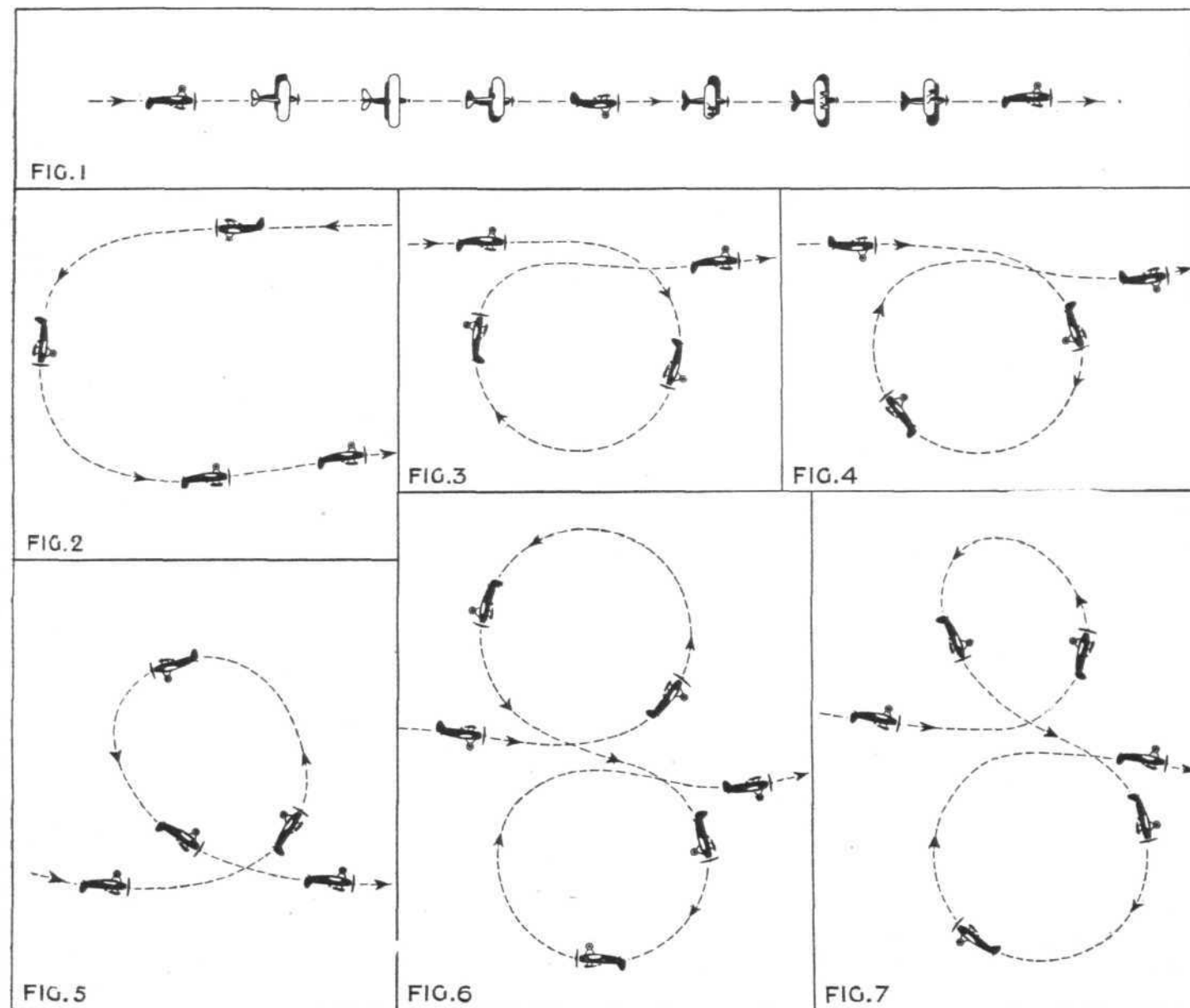
The author of the following article, Herr Gerhard Fieseler, has become famous on the Continent as a "stunt" pilot. We have not personally had the privilege to see his "aerobatics," but several British pilots who have seen him fly in Germany hold the view that he is the world's finest exponent of stunting. As pilots are conservative folk, and not given to unduly praising one another's performances, this is praise indeed. We would suggest to the attention of the Royal Aero Club the advisability of persuading Herr Fieseler to come to this country during the coming summer in order to give a demonstration at one or more of the meetings to be held in 1928. He is already busy booking engagements, and it would be wise to get into touch with him at once so as to make sure of arranging the demonstration. The Editor will be pleased to furnish Herr Fieseler's address to any club desiring to communicate with him.

Herr Fieseler was a "Jagdstaffel" pilot during the war, and as he says in the concluding paragraph of his article, he would like personally to meet some of the British pilots about whose skill he was able to gain first-hand knowledge during the war! Perhaps it might be possible to arrange for a match against some of our "stunt" pilots.

In the following article Herr Fieseler relates some of his experiences while training for and experimenting with some of the new "stunts" that he has evolved. His constant warning is: "Keep high," and he gives examples from his own experience of cases where a lower altitude would have meant disaster. At the same time, it should not be thought that Herr Fieseler carries out his demonstrations at a great height. He does not, and some of his "stunts" are done very close to the ground indeed. The secret, according to him, lies in knowing what can safely be done at a low height and what cannot.—Ed.]

THE first demonstration of "aerobatics," or "stunt flying," were, as is well known, given in 1912 by the Frenchman Pegoud. Shortly afterwards his "stunts" were imitated by other pilots, German among them. As, however, flying

did not receive its full and unfettered development until the world war, so here also was "stunt flying" fostered and taught at the fighter schools. As the war went on, the performance of man and machine increased, and so it came about that



"AEROBATICS": Some of the "Stunts" carried out by Herr Gerhard Fieseler and described in the accompanying article. 1, Shows the roll, with the fuselage horizontal. 2, First half of inverted loop. 3, Downward loop from inverted position. 4, Inverted loop downward from normal position. 5, Inverted loop upwards. 6, Vertical figure-of-eight, finishing with inverted loop. 7, Vertical figure-of-eight, commencing with inverted loop from inverted position.



already in 1916 almost every fighter pilot was able to "stunt" his machine. The very nature of air fighting was such that only those pilots were successful who could handle their machines even in abnormal attitudes. Thus, it is said that the well-known French fighter pilot Guynemer during a hard-pressed air fight evaded his German adversary by means of a half-loop upwards, and then shot him down while he himself was in the upside-down position. It is well known that Immelmann frequently attacked by what later became known after him as the "Immelmann turn." I also at that time as a fighter pilot conceived the idea of carrying out new and hitherto unknown evolutions. For instance, I imagined that one would, by a half forward loop followed by a half-roll, be superior, both in attack and defence, to an adversary. The carrying into effect of this idea, however, was precluded by the inferior strength of the machines of that time, which did not enable me to take the risk. The experience of the war years has naturally drawn the attention of all the nations to the military value of "aerobatics," quite apart from the purely sporting interest of "stunting," and to the need for practising and improving on this form of flying. This has been attained with more or less success in the different countries.

Countries with a strong and unrestricted air arm (England, France, Italy) have maintained a relatively great and qualitatively good nucleus of fighter pilots, and have trained new ones. They have, besides, been able, through military subventions, to develop during the post-war years good single-seater fighter machines. So in England, for instance, every fighter pilot is able to do the (inverted) half-loop forward, followed by the half-roll.

From Vol. XXVII, December, 1923, of "The Journal of the Royal Aeronautical Society" I take the following extract:—\*

"The first half of an inverted loop can be regarded as yet another method of attaining the inverted position; as, however, it contains special features of interest, I have treated it specially. Although in the second half of an inverted loop, even could it be performed, it is difficult to see any military value, in the first half there are undoubted possibilities. In combination with a half-roll it could be utilised for a rapid change of direction. The pilot would be flying in one direction, perform an inverted half-loop, fly for a moment inverted, and then half-roll out flying in the reverse direction. This manœuvre would actually seem a more rapid way of reversing the direction of flight than that of turning with a vertical bank. In aerial combat the attack is often made in a steep dive. Almost as often it happens that the pilot of the diving aeroplane is compelled to cease firing because his opponent's aeroplane, flying in the opposite direction, passes underneath him. . . . It is certain that a fighting scout, capable of performing any given manœuvre and designed for war, will bring with it the pilot determined to explore its value as a weapon of offence. It is therefore essential that the designer, breaking away from present-day tradition, shall foresee future developments in aerobatics, and as far as possible allow for them in the strength of the design."

From reading this extract one obtains an indication of the importance attached by our military neighbouring states to the carrying out of "stunt" flying. Now, how does our post-war development here in Germany look? According to the Versailles Treaty, the maintenance of a military air fleet is denied us. The inflation period made it financially impossible for pilots of that time to take up flying purely as a sport, and the state was not permitted to make appropriations for such purposes. As a result, the old stock of "stunt" pilots disappeared, and newcomers were not trained. A similar picture is formed by the aircraft industry, which, not until of recent years, has brought out machines in some measure suitable for "aerobatics." The meetings arranged by various clubs and societies at more and more frequent intervals generally offered an opportunity, although for a niggardly compensation, to those few sport and stunt pilots still remaining to do something (the love of flying had to supply the deficit), and thus brought to German sporting flying a certain amount of adherents. How greatly dependent upon public support is the development of flying in general is shown by the development of our commercial aviation during the post-war years. Here we are not subject to the rigorous restrictions, and in this branch of aviation we lead the world.

As the military aspect of "aerobatics" does not come into consideration in Germany, what value has, for us, sporting and "stunt" flying? In the main, there are three reasons for us to present to the general public "aerobatics" at flying

meetings. Firstly, the fact that a well-executed evolution in the air presents an aesthetically beautiful spectacle. Secondly, "stunt" flying has a great value as a sport. It requires the closest co-operation of man and machine found anywhere: the legs operate the rudder; the right hand the elevator and ailerons; the left hand the throttle and ignition controls; the eyes observe approximately eight different instruments; and the ears are constantly listening to the sound of the engine. But the alpha and omega of flying is a certain "feel," consisting in a ceaseless concentration of all faculties, and which cannot be described. Flying is "feel." And now for the third reason. "Aerobatics," or "stunt" flying, with its heavy stressing of the machine, obvious even to the lay mind, brings to the general public a sense of the unquestionable safety of our commercial machines which are flown in a straightforward manner only, and are not, therefore, stressed by far as greatly as is a "stunt" machine.

In what follows I shall deal with the technique and development of the evolutions which I carry out. Before doing so, however, I must point out that I returned to flying in May of 1926, after an absence from flying of nearly seven years. Thus I was no beginner, although I had to spend several weeks in regaining the old sureness, and in order to be able again to carry out neatly and precisely the evolutions which I had been in the habit of making during the war. I saw and felt that in the meantime machines had been produced with considerably higher load factors. For example, the Raab-Katzenstein "Schwalbe," which I use for my "aerobatics" demonstrations, has a safety factor of 14, and now I at last concluded that I should be able to realise my ambition to do some really new "stunts."

As far as I was concerned, seven new "figures," or evolutions, came into consideration. These were:—(1) Rolls, keeping the fuselage in a horizontal position. (2) Half-loop forward (inverted). (3) Downward loop from the upside-down position. (4) Closed inverted loop forward. (If I should succeed in 4, which when I started was a very great question, then I intended to try the following):—(5) Upward loop from upside-down position. (6) Vertical figure-of-eight. And finally (7) Vertical figure-of-eight in upside-down position.

I was quite clear in my own mind that the solution of the task I had set myself would only be possible if I set to work slowly, gradually, and with the greatest possible caution. The roll (1) with the fuselage horizontal, as I had visualised it, caused me considerable difficulties because elevator and rudder controls had to be reversed twice during a roll, and that at a certain definite moment. There are various kinds of roll, but as these are similar, and well known in principle, I do not propose to refer to them here. In my opinion, one can tell the "feel" of a pilot by the way in which he does a roll.

In all my experiments, some of which stressed the machine heavily, I have depended not upon measurements of stresses but upon my own "feel" of the machine. Day in and day out I flew my machine until I felt thoroughly at one with it. Not until then did I attempt to become intimately familiar with the feat of upside-down flying. Before attempting to carry out an evolution with which I was unfamiliar, I would think it out thoroughly in my own mind. In doing this I soon discovered that a new movement, a new evolution, succeeded the better and quicker the longer and the more thoroughly I had thought it out. On account of the often complicated control movements, for instance, in a curve while upside down, I had to resort to the use of a small aeroplane model, on which I studied the different control movements. Then, when going up to make the actual evolution, I found that I did not have to think what control movements were necessary for a certain manœuvre, but could rely entirely on my "feel" of the machine, and I surprised myself by the way in which the desired evolution was carried out without any reflection at all on my part. Thereby I had the feeling that my limbs handled the controls by themselves, or as if my sub-conscious mind directed the manœuvre. After a new experiment of this sort I was not even quite clear how I really had controlled the machine. Only after I had carried out the manœuvre several times could I observe the control movements, and then correct minor faults. A new "stunt" learnt in this way, I would next try to carry it out in the opposite direction. But that would not do. Somehow or other the machine flopped out of it, and I had to start all over again as described above. Especially flying upside down, and all evolutions carried out in the upside-down position, I have had to learn in this fashion. I should further point out that at the beginning of my upside-down experiments I had no feeling of speed at all. This was dangerous on account of the risk of falling into an upside-down spin. At first I

\* This reference is to the paper entitled "The Manœuvres of Inverted Flight," read by Squadron Leader R. M. Hill, before the Royal Aeronautical Society, on October 18, 1923.—Ed.

had to depend upon the load on the controls for my speed indication. As is well known, the pressure on the controls increases with speed, as in flying the right way up. I also had to take into consideration the possibility that at some time or other I might get into an upside-down spin, and I had beforehand studied the problems of what I should have to do to get out of such a situation. In the English flying schools a number of pilots have crashed from this cause, among them several experienced pilots. The danger of the upside-down spin is that the control movements necessary to bring the machine out are the reverse of those required in getting out of a spin the right way up.

It was not until after continued training, and by proceeding step by step, in the handling of the three separate controls, that I developed the "feel" for speed. One very important matter in getting the correct "feel" in upside-down flying is the method of being strapped in. Too slack a harness made me feel unsafe, and once a sudden lurch of the machine caused me to slide off my seat and temporarily to lose control. After that I adjusted the shoulder straps so tightly that they caused a pressure in normal flight. I also had an extra strap made which holds me firmly down on the seat. With this there is no difficulty about control in the upside-down attitude. Nor do I fail to secure my feet to the rudder bar, and for long upside-

supplied with petrol and oil even in the inverted position. As, however, there were no data available on this subject, it took several weeks to get this arrangement to work satisfactorily.

Although to-day I can make upside-down flights of 4 to 6 minutes without feeling any special bodily ill-effects, after prolonged flights of this nature a certain fatigue sets in. Thus after landing from my upside-down flight from Cologne to Bonn, I felt as if I had been marching without interruption for 10 hours, or as if I had been doing hard manual work for a whole day. As I jumped from the machine I should have fallen but for the assistance given me by those on the aerodrome.

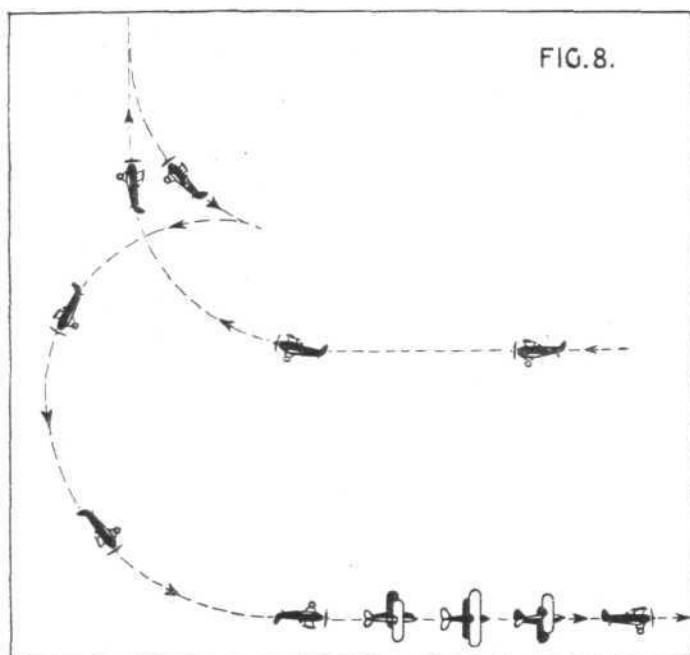
It is often assumed that after a long inverted flight the blood pressure in the head must become very considerable. Although obviously the blood does run to the head, and I have the feeling that the head becomes big, the pressure seems to reach a certain amount after a time, and to be comparatively slight, without undue ill-being. Only coming into a normal attitude after a long inverted flight does one experience a temporary attack of giddiness.

### The Inverted Loop

As is well known, until I demonstrated it the experts had considered the inverted loop impossible. It is true that through an acquaintance I heard in June of last year that after many experiments the well-known American pilot Doolittle had succeeded in making an inverted loop, but he had bloodshot eyes after landing, and was so exhausted that he had to be taken to hospital. He is said later to have expressed the intention never to attempt this evolution again. After my experiences I can understand that this happened. This is probably first and foremost due to the unsuitability of his 450 h.p. machine for this particular manoeuvre. Perhaps, also, he maintained the position of the body usual in normal flight and did not follow the necessary precautions which my experiments led me to adopt. The reader will not, I am sure, take it amiss if I do not go into details concerning these precautions, which I have only discovered after comparatively lengthy experiments and at a certain amount of risk.

At first I practised many times the first half of the inverted loop. First with the engine off, then with half throttle, and finally with full throttle. Full throttle I only used in coming out of a stall, since otherwise the engine would have raced, and there would also have been some risk of the propeller bursting. This was a possibility with which I had to reckon, as an unexpected propeller breakage might have led to a catastrophe, and this I realised, like other possible mishaps, before undertaking a new experiment. I thought out clearly and thoroughly beforehand what to do in case of any difficulty that might arise, and in the course of my experiments I ascertained this slow and deliberate procedure to be the correct one. After I knew quite definitely how my machine behaved at various speeds, how the control loads were, and last, but, not least how I myself felt, I proceeded to attempt the second half of the inverted loop, independent of the first half.

At first my machine used to fall out of the inverted loop either sideways or backwards when it had reached the vertical position, or slightly past it. The cause for this unintentional and often very unpleasant manoeuvre was that either I had not sufficient speed at the commencement of the second half, or that I used the elevator incorrectly. The correct amount of elevator in the second half of the inverted loop caused me a great deal of speculation, because the control load fell away very quickly after beginning to point the machine upwards (the German word used in the original text is "Hochnehmen," for which we have no equivalent unless one were to use the expression "inverted hoicking"—Ed.), although the speed in a normal loop had proved sufficient to produce a control load. I trace this peculiarity to the aerodynamic characteristics of the machine in this particular evolution. Not until after many attempts did I discover the correct amount of elevator to give. When I added the first half of the inverted loop to the second half at last perfected, at first with a short inverted flight between the two, the new "stunt" was ready, and I could at last begin to think of the "stunts," vertical figures-of-eight. While up till now most of my troubles had to do with the machine and its handling, I now had to fight chiefly against bodily physical difficulties. The precautions which I had discovered to be necessary for the closed inverted loop were now insufficient. This is explained by the fact that during a vertical figure-of-eight there is a reversal of blood pressure in the head. In a normal loop, as is well known, the pilot is pressed into his seat, and there is a draining of the blood from the head. In an inverted loop,



**"AEROBATICS":** Fig. 8 shows a "stunt" which Herr Fieseler has carried out while carrying a passenger. The "stunt" is started with a "zoom," followed by a tail-slide, from which the machine recovers by diving. It is then flown on to its back, and righted by a roll.

down flights I have my feet strapped to the bar, since otherwise the legs would sink down.

The control movements during upside-down flying can easily be imagined by any pilot, but they are less easy to describe, and the difference in viewpoint between a pilot upside down and an observer on the ground would make an explanation complicated. At any rate, elevator and aileron controls are reversed. The rudder control is not reversed, as seen from the pilot's seat, but only the direction of the curve. All three controls work effectively when flying on one's back, provided sufficient speed is maintained. Above all else, the inexperienced upside-down pilot must take note that the control movement which in normal flight gives an increase in speed, results in a loss of speed when upside down, and *vice versa*.

At the beginning of my experiments the duration of my upside-down flights was quite short. Gradually I made longer flights, and once even as long as three minutes. On these occasions the engine merely idled, so that the flights were only glides. During these I ascertained that when on its back the machine loses height very rapidly, nearly twice as fast as in normal gliding flight. This is, of course due to the low lift coefficient of the wings in the inverted position. In order to be able to carry out long flights upside down I devised and had made a scheme whereby the engine was kept



however, the blood is forced to the head. Owing to the sudden reversal of blood pressure, a feeling of giddiness is experienced, often combined with loss of sight ("everything going black"), which is usually of short duration. On one occasion only did it refuse to "get light again," a fact which would have entailed no particular danger had not at the same time my sense of balance left me. It is, however, well known that a pilot does not retain for more than a very short time his sense of balance if he closes his eyes, or is flying in a thick cloud or in fog. When that happens he no longer knows how to handle his machine. Pupils and young pilots have paid for their inexperience with their lives through this cause. In commercial aeroplanes there are, of course, instruments which indicate to the pilot the attitude of his machine, although a commercial pilot does not usually fly in clouds or thick fog, but only through small clouds, or with a thorough knowledge of how to fly his machine by instruments.

The "everything going black" phenomenon was thus in my case a "dark occasion" in the full sense of the word, a situation which might have ended in disaster if I had not already beforehand included it among the contingencies that might arise. Following a plan I had determined upon beforehand, I tore helmet and goggles off, and rested my head on the cockpit coaming, in the slipstream, and opened my mouth wide. The dodge succeeded in a comparatively short time. Nowadays the loss of sight occurs but seldom, and then only for a quite short period, in doing a vertical figure-of-eight. In an inverted vertical figure-of-eight, however, the troubles do continue to arise, even now. There must, therefore, be a peculiar difference according to whether the blood is first forced to the head and then drained from the head or vice versa.

Here it should be pointed out that during the first few weeks, when I carried out these "stunts" almost daily, I used to suffer from peculiar headaches. On consulting a physician I was told, after an examination that gave only negative results, that the dull headaches were to be attributed to my inverted flying, and he could prescribe nothing better for me than that in future I should fly in a normal attitude! In spite of this well-meant advice, I continued to practise my new "stunts," and today I no longer suffer from this somewhat painful pressure in my head. I feel fit and cheerful as before. Certainly, as I have said before, I still frequently suffer from loss of sight in doing the inverted vertical figure-of-eight, but this is of short duration and perfectly painless. All the senses continue to work; only the sight is completely lost temporarily. Lately I have discovered a remedy for even this, which consists in not running the upper loop of the vertical figure-of-eight straight into the lower, but to fly straight for quite a short distance between the two loops. By doing this, the reversal of blood pressure is somewhat spread out, and loss of sight does not then occur.

I have always carried out my experiments at a safe height, and even today I do my "aerobatics" at a considerable altitude. I even go so far as to write down before each demonstration the programme which I intend to carry out. In this programme I write down the height at which each "stunt" is to begin. Before the start I attach the programme to my knee, immediately below the altimeter, so as not to be tempted into doing "aerobatics" at too low a height. The greatest danger in "aerobatics" arises through doing the "stunts" too close to the ground. Circumstances can arise, no matter how certain the pilot is, which lead to disaster because the machine is too close to the ground. On the other hand, with adequate height, the pilot will, in 90 out of 100 cases, be able either to get his machine under control again or to remove the cause of the trouble. I will confine myself to giving two such instances.

It was during the time when I was practising the second half of the inverted loop. In one attempt (at 2,000 ft.) to get the machine to climb from the inverted position, the petrol supply to the engine failed suddenly, and the propeller stopped instantly. The machine was in that critical attitude when it had practically no speed, and consequently the controls were ineffective. I therefore slipped down backwards, inverted, stalled until the nose dropped, and went into a spin. After about two turns I got the machine under control. A glance at the altimeter told me that I still had another 500 ft. I was thus just in time to reach the aerodrome and land without the engine.

The second instance, which might have had serious consequences if I had not had sufficient height, happened as follows: At 1,300 ft. I put the machine into the inverted position. No sooner did the shoulder straps begin to take the weight of my body than I heard a dull sort of thud. While wondering what could have caused it, I discovered that the rudder,

which is, of course, operated by the feet, was immovable. I was therefore unable to use the controls in such a way as to right the machine. And, anyway, I would have to make another turn. I first attempted to bring the machine upright with the ailerons only. In doing this I sideslipped and lost about 800 ft. in height. In this case, my attempt to right the machine with a half-roll was a wrong manoeuvre. I feel sure it would have been better to have got out by doing a half-loop downwards, although even by this manoeuvre I should have lost about 500 ft. A half-loop upwards was scarcely to be considered in such a ticklish situation since, in case of it being unsuccessful without the rudder, I should scarcely have had time to right the machine. I might here add, parenthetically, that this was a mishap which I had not foreseen and taken into account. I will now relate the cause of the incident. In the front cockpit was a tommy bar, used for taking off the propeller, about 20 in. long and weighing about 9 lbs. In spite of a careful inspection I had failed to notice this bar in the cockpit, and when the machine was inverted the bar became wedged between foot bar and cockpit floor in such a manner that the rudder could not be moved. Once the bar had been discovered I was able to kick it away with my foot.

When, in the foregoing, I have pleaded for "aerobatics" to be carried out at a considerable height on account of the risk, I was referring mainly to evolutions, the success of which cannot be guaranteed on account of their difficulty. Thus I would not claim that a normal loop close to the ground is a foolhardy business provided the machine is suitable for looping and the pilot has accustomed himself by long training to the proximity of the ground, and has a sure hand. Undoubtedly, a loop or roll close to the ground is impressive, the public is enthusiastic, and the object for which a flying meeting is really arranged is attained. I therefore consider it wrong when the authorities prohibit "stunting" near the ground (as distinct from close to the public, which is quite another matter). The pilot who, in a normal loop, touches the grass with his wheels, or in a vertical bank sends up a spurt of sand with his wing tip, unquestionably shows that he has absolute mastery of his machine.

This subject has, however, a drawback inasmuch as pilots who are not yet entirely certain in crazy-flying will attempt this close to the ground. The officer in charge of the aerodrome is powerless because the pilot in question can plead that, for instance, Udet does "stunting" close to the ground. (In this country we should substitute for Udet, Noakes and Fogarty—Ed.) Therefore, pilots who have proved by year-long experience in "stunting," and by their present-day qualities as pilots that they are qualified, should be permitted to do certain specified "stunts" at low heights, but not over or near the public. Pilots not holding a license for these evolutions should, undoubtedly, be prohibited from carrying them out below 700 ft. The layman will probably think that each pilot must be the best judge of what he and his machine are capable of doing, and may argue that in other forms of sports there are no restrictions such as, for instance, the maximum speed at which a racing car driver may travel or the height to which a ski jumper may rise. While that is true, flying is rather a different matter. For example, nobody would dream of ceasing to use the motor-car because the newspapers bring accounts of accidents. But in the case of an air crash, quite considerable harm is done to commercial aviation and to flying in general. Flying is still too young, and the layman does not yet understand it sufficiently. The great public must be given confidence in our most modern form of transport, and to that end flying mishaps of every kind must be avoided. Hence the restrictions mentioned above. Experience has shown that not only young pilots are foolhardy. Even experienced pilots are often carried away by a sort of feeling of over-confidence. This seems to be part of the very nature of "stunt" flying.

It might be thought, and I thought so myself for a time, that no more new "stunts" are now possible. That is not so, however, and I have further "stunts" in stock and very pretty ones at that. But these are very difficult to carry out. I have attempted them, but in vain; my machine refuses. The small power reserve is not sufficient for these new "stunts," nor is the wing section suitable, and there are other difficulties. I am now living in the hope that someone will make me a present of a new machine. With the best will in the world I am unable to earn enough by "stunt" flying to be able to buy one!

I should be particularly happy to have an opportunity of meeting English pilots, of whose outstanding abilities I was able to convince myself during the war. Perhaps an opportunity to visit England may occur before long.

## PRIVATE



## FLYING

A Section of **FLIGHT** in the Interests of the Private Owner, Owner-Pilot, and Club Member

## PRIVATE FLYING IN 1927

ONE of the natural aspects of private flying is that it is private flying for the greater number of private owners. They pursue their sport in utter privacy. They obtain their machine after learning to fly at one of the clubs or schools, and they take it away to their own part of the country and you never hear of them any more. There is something commendable in this modesty and in a strict sense the attitude is as it should be. It shows that these owners regard flying as a normal habit and nothing to tell the world about. But, however admirable this may be, its one disadvantage is that it conceals exactly what the world wants to know.

Although flying may be normal to them, it is not so with hundreds of others, who, therefore, need an example. At present, this is not forthcoming to the extent that it could be. There are at least seventy private owners in this country and there cannot be more than half-a-dozen who are publicly known. The experience gathered is consequently very small.

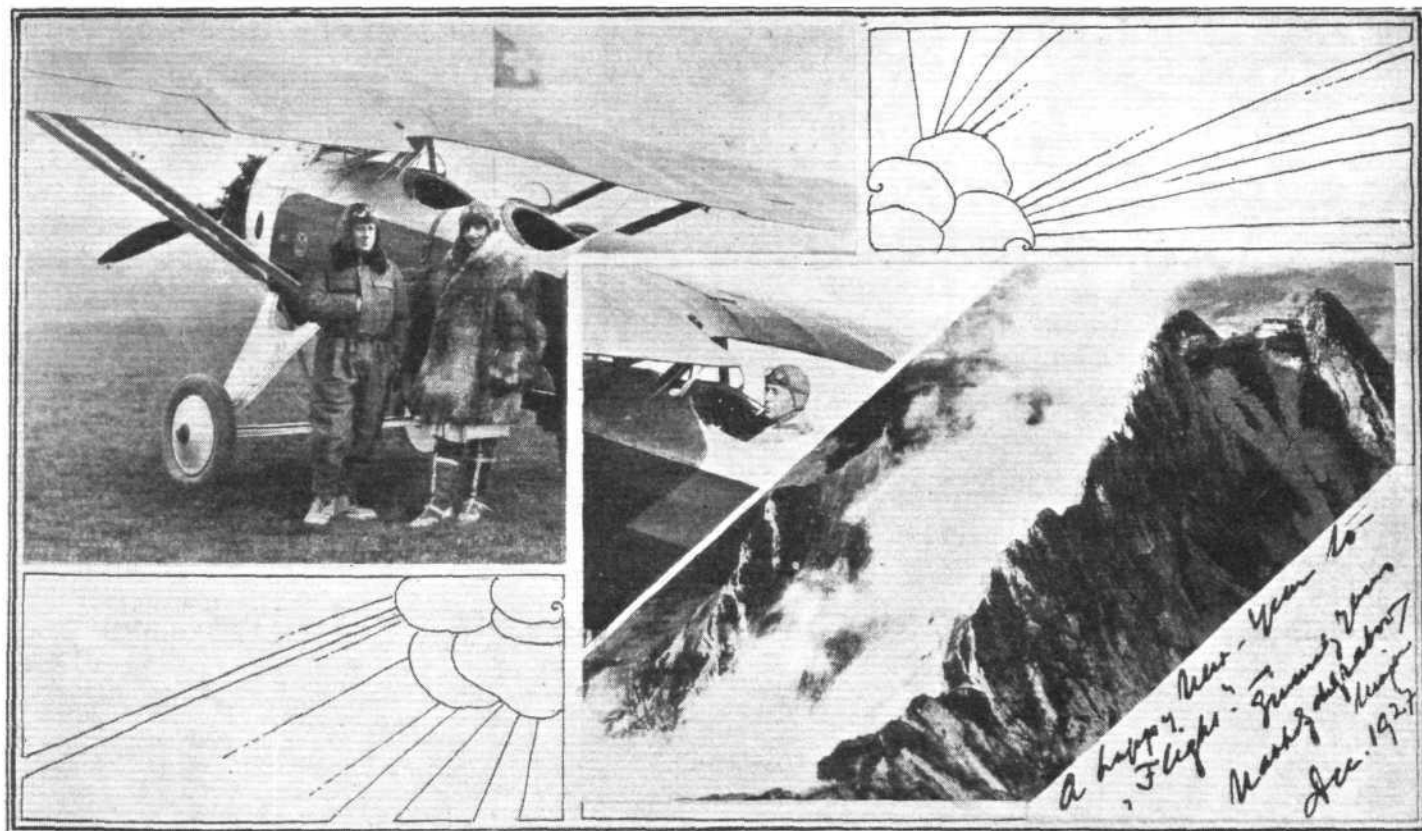
One result, then, is that in a *résumé* of the past year for private flying there is not much to recall. It is possibly presumptuous to attempt this at all, and comparable to a baby reflecting upon its first year, during which it has not done much more than just put on weight, for the year 1927 really marks the first year of private flying. It has assumed proportions in this period which has marked its definite arrival. At the beginning of the year there were twenty-five owners, so now there are nearly three times that number.

It would be interesting to know how many hours flying they have all done for the period. Whatever it amounts to,

it cannot be counteracted with any fatalities to our knowledge. If any of the modest owners have hurt themselves, they have kept that private too, but we are very certain they are all present and correct. There were a few accidents, but the victims recovered except in one instance, when the owner's passenger died.

The most useful work accomplished by the owners last year are the tours of the Continent. Prominent among these were those of the Duchess of Bedford, who covered 4,500 miles in one tour to Tangier in the course of 55 hours' flying over a period of three weeks, and later in the year this was followed by a 3,500-mile tour to the Lido and Naples. On both occasions the Duchess flew in a "Moth" piloted by Capt. C. D. Barnard. Apart from these trips, she has flown elsewhere and in particular from her Woburn seat in Bedfordshire to her Scottish seat. Incidentally, the Duchess appears in this year's Honours List as a Dame Commander of the British Empire Order.

The other two well-known lady owners, Lady Bailey and Lady Heath (Mrs. Elliott-Lynn), have been conspicuous for making altitude records, as well as air racing. The first record was a joint effort, Lady Heath then being the pilot and Lady Bailey passenger. On May 18, they ascended from Hamble, Southampton, in an Avro "Avian" Mk. II Cirrus, and reached a height of nearly 16,000 ft. On July 5, Lady Bailey made her own attempt with Mrs. G. de Havilland as passenger, from Stag Lane. In a D.H. "Moth" an altitude of 17,284.3 ft. was gained, and this still remains the world's record in the two-seater light aeroplane class. Lady Heath tried to beat it in an Avro "Alpha-Avian" from Woodford,



**A NEW YEAR GREETING FROM SWITZERLAND:** These photographs have been sent to **FLIGHT** by Major Nabholz de Grabow, Switzerland's veteran private owner, who, in spite of his 59 years, is never happier than when he is flying his Morane-Saulnier parasol monoplane. The photograph on the left shows the Major and his daughter on the return from a flight, while on the right is an aerial view of Mount Pilatus.



Cheshire, on October 8, but her certified total miraculously tied with that of Lady Bailey's, and, in accordance with the conditions governing records, the latter remains the holder. Other feats of Lady Heath were the winning of the Grosvenor Cup on a D.H. "Moth" at the Nottingham Bank Holiday meeting, a flight of 1,200 miles round England during which 79 landings were made, and a tour to Poland in her "Avro Avian" with Mr. Hollindrake as passenger. Besides these distinctive achievements, Lady Heath won many air races. Lady Bailey became the President of the new Suffolk Club during the year.

One of the first private tours was carried out by Mr. D. Kittel in the Easter holidays. It was a short one to Germany, Holland and Belgium in his own D.H. "Moth." More recently, he did a very long tour round Europe in his new "Moth X," covering nearly 4,000 miles, and touching at points like Budapest and Naples.

On May 24 Mr. Dennis Rooke left London for Australia in his own D.H. "Moth" and reached Karachi, where a mishap unfortunately ended his flight. He returned to England a short time ago looking bronzed and well.

Sir John Rhodes made a tour alone in his D.H. "Moth" to the South of France in June, and totalled 1,548 miles. Mr. N. H. Jones distinguished himself in July by winning the Air League Challenge Cup at Birmingham on his A.N.E.C.11 machine. In August Mr. Ivor McClure set off in his D.H. "Moth" accompanied by Capt. S. L. F. St. Barbe, the London Club Instructor, and did 2,200 miles in a European flight which, owing to an unavoidable mishap, finished at Budapest. Lieut. L. G. Richardson spent his summer leave on a flight to Malta in his D.H. "Moth" in the company of his brother. About 3,730 miles were flown without any trouble occurring. The next prominent event in the year was Mr. Bert Hinkler's non-stop flight from London to Riga, a distance

of 1,200 miles, in 10½ hours. This was on August 27. Mr. Hinkler has just claims for appearing in a *resumé* of private flying for, although he is a professional pilot he is also a private owner. This flight was carried out in his Avro "Avian" (Cirrus II) and constitutes an unofficial record. Lieut. R. R. Bentley's record flight to the Cape in his D.H. "Moth" in September was also a private venture. He flew over 8,000 miles in a month.

Squad.-Ldr. The Hon. R. A. Cochrane, *p.s.a.*, and Flight-Lieut. Drew toured Europe in September in a Westland "Widgeon." Nearly 4,000 miles were flown in the course of 52 hours' flying time. They touched at such opposite points as Warnemünde in Germany and Pisa in Italy.

Capt. Lancaster and his passenger Mrs. Keith Miller have beaten Lieut. Bentley's record this year by their present flight towards Australia, in the course of which they have reached Tavoy. They left England on October 14 in their Avro "Avian" (Cirrus).

This completes a record of all the prominent events among the owners for 1927. In view of our previous comments we should perhaps qualify it and say that it completes a record of all known prominent events, for it is impossible to declare what our modest owners may have done in their rigid seclusion.

With regard to the clubs, which foster private flying, we will make a survey of their performances and progress next week, if possible. There have been five new ones opened during the year, bringing the total to eleven. The Bristol Club commenced flying in July, although its opening day, at which Sir Samuel Hoare officiated, did not take place until October 8. The Norfolk and Norwich Club commenced flying at the end of June, the Suffolk Club in September, the Nottingham Club in November and the Scottish Club had its opening day on December 3. Nearly all the Clubs have held interesting air pageants or air days.

## LIGHT 'PLANE CLUBS

**London Aeroplane Club**, Stag Lane, Edgware. Sec., H. E. Perrin, 3, Clifford Street, London, W.1.  
**Bristol and Wessex Aeroplane Club**, Filton, Gloucester. Secretary, Lieut.-Col. C. Fleming, Filton Aerodrome, Patchway.  
**Hampshire Aero Club**, Hamble, Southampton. Secretary, Maj. Ross White, Hamble, Southampton.  
**Lancashire Aero Club**, Woodford, Lanes. Secretary, C. J. Wood, Oakfield, Dukinfield, near Manchester.  
**Midland Aero Club**, Castle Bromwich, Birmingham. Secretary, Maj. Gilbert Dennison, 22, Villa Road, Handsworth, Birmingham.  
**Newcastle-upon-Tyne Aero Club**, Cramlington, Northumberland. Secretary, A. H. Bell, c/o The Club.

**Norfolk and Norwich Aero. Club**, Mousehold, Norwich. Secretary, H. O. Bennett, 5, Opie Street, Norwich.  
**Nottingham Aero Club**, Hucknall, Nottingham. Hon. Secretary, Cecil R. Sands, A.C.A., Imperial Buildings, Victoria Street, Nottingham.  
**The Scottish Aero Club**, 101, St. Vincent Street, Glasgow. Secretary, Harry W. Smith.  
**Suffolk Aeroplane Club**, Ipswich. Secretary, Courtney N. Prentice, "Hazeldeil," Stowmarket, Suffolk.  
**Yorkshire Aeroplane Club**, Sherburn-in-Elmet, Yorks. Secretary, D. M. N. Coles, The Aerodrome, Sherburn-in-Elmet.

### LONDON AEROPLANE CLUB

FLYING RETURN for December, 1927.—Total flying time, 37 hrs. 45 mins. Dual instruction, 39 flights, 14 hrs. 35 mins. Solo flying, 47 flights, 18 hrs. 5 mins. Passenger flights, 5 flights, 1 hr. 35 mins.; Test flights, 21 flights, 3 hrs. 30 mins.

There has been no flying since December 18. The club was closed down for one week at Christmas, and both before and after Christmas the weather prevented any flying.

The annual dance of the London Aeroplane Club was held at Brent Bridge Hotel, Hendon, on December 19.

In spite of the inclement weather there was a fairly large gathering of members and friends.

The various challenge trophies won by the club during the year were on view, and these included:—

The Air League Challenge Cup.—Won by Norman H. Jones; second, W. T. Hay; third, the Hon. Lady M. Bailey.

The Wakefield Trophy, Hamble.—Won by L. J. C. Mitchell.

The Wakefield Trophy, Liverpool.—Won by W. T. Hay.

The Newcastle Challenge Trophy.—Won by Capt. F. G. M. Sparks.

During the evening replicas of the trophies were presented to the winners.

### HAMPSHIRE AEROPLANE CLUB

REPORT for week ending December 24.—Most of our members forsook the rudder bar in favour of skates this week, and also several consignments of assorted weather arrived, so our flying times were small.

Total flying time, 4 hrs. 20 mins. Instruction, 2 hrs. 20 mins.; solo, 1 hr. 45 mins.; test flights, 15 mins.

The following members had instruction: Mrs. Ranaid, Mr. Kerry, Mr. Cripps, Mr. Storey, and Mr. Lowe-Wyde.

The licensed soloists were Flying Officer Southey, Mr. Parker, Mr. Falconer and Mr. Bowen, and the unlicensed soloists were Capt. Kirby and Mr. Cripps.

REPORT for week ending December 31.—The club opened again on Friday after the Christmas holidays, but owing to lack of foresight or imagination on the part of those responsible for attending to such things we have no ski undercarriages for our aircraft, so our instructor said, "No use!"

However, a very jolly revel was held on New Year's Eve. It commenced as a dance in the clubhouse, but after dancing for an hour or two, someone suggested musical chairs and that started it.

All the usual seasonal games were indulged in, including "Dumb Crambo," when one team gave a delightful representation of a parachute drop, and the fun was kept up until about 2 a.m. in the New Year.

We have had a machine standing by ready to go off and drop food to inhabitants isolated by the snow, but conditions have not rendered this action necessary.

### NEWCASTLE-UPON-TYNE AERO CLUB

REPORT for week ending December 25.—Total time, 10 hrs. 20 mins. Dual instruction, 4 hrs. 45 mins.; solo, 1 hr.; "A" pilots, 4 hrs. 15 mins.; Tests 20 mins.

Instruction (with Mr. Parkinson): Messrs. Thirlwell, Fairless, Miss Rambaut, DePledge, V. Heaton.

Solo: Mr. DePledge.

"A" Pilots: Miss Leathart, Mrs. Heslop, Mr. W. B. Ellis, Mr. C. Thompson, Mr. D. Wilson, Mr. Leech.

Passengers (with Mrs. Heslop): Mr. C. Thompson. (With Mr. C. Thompson) Mrs. Heslop, Mr. A. Bell. (With Mr. Baxter Ellis): Mr. P. Cooper.

Mr. C. Thompson completed his 20 hours' flying since August 1, on Sunday, the 25th. He is the first member of the club holding licence "A" to earn the full subsidy.

### NORFOLK & NORWICH AERO CLUB

REPORT for week ending January 1.—Total flying time, 6 hrs. 15 mins. Instruction with Capt. Lines: Messrs. A. G. Barrett, H. Birchall, R. F. Potter, H. Mack.

Soloists: W. A. Ramsey, W. P. Cubitt, H. Birchall, F. Gough.

Passengers: N. Paul, J. Morse, H. Hanworth.

### SUFFOLK AEROPLANE CLUB

REPORT for week ending January 1.—Flying time, 4 hrs. Instruction with Mr. Lowdell: Miss Edwards, Mr. Billinton, F. H. Jolly, F. Verney. Passengers with Mr. Lowdell: Miss Easern, Mr. Watt.

Passengers with Mr. Prentice: Miss Rygate, Miss Eastern, Mr. Billinton. Soloists: Dr. Jas. Sleigh.

Sir Sefton Branker visited the club on Tuesday, December 20. He arrived from Martlesham in an Avro "Lynx," piloted by Sqdn.-Ldr. Noakes. Sir Sefton Branker inspected the aerodrome and clubhouse, and expressed his satisfaction of the work the club has done.

Although there had been a heavy fall of snow and a bitterly cold wind was blowing, our President, the Hon. Lady Bailey, flew over to welcome Sir Sefton.

### YORKSHIRE AEROPLANE CLUB

As the club has been closed during the last week we have no flying report to send in. About 20 minutes' flying was done the previous week, and we have nothing to report except to wish all a very Happy New Year.



# EASTWARD HO!

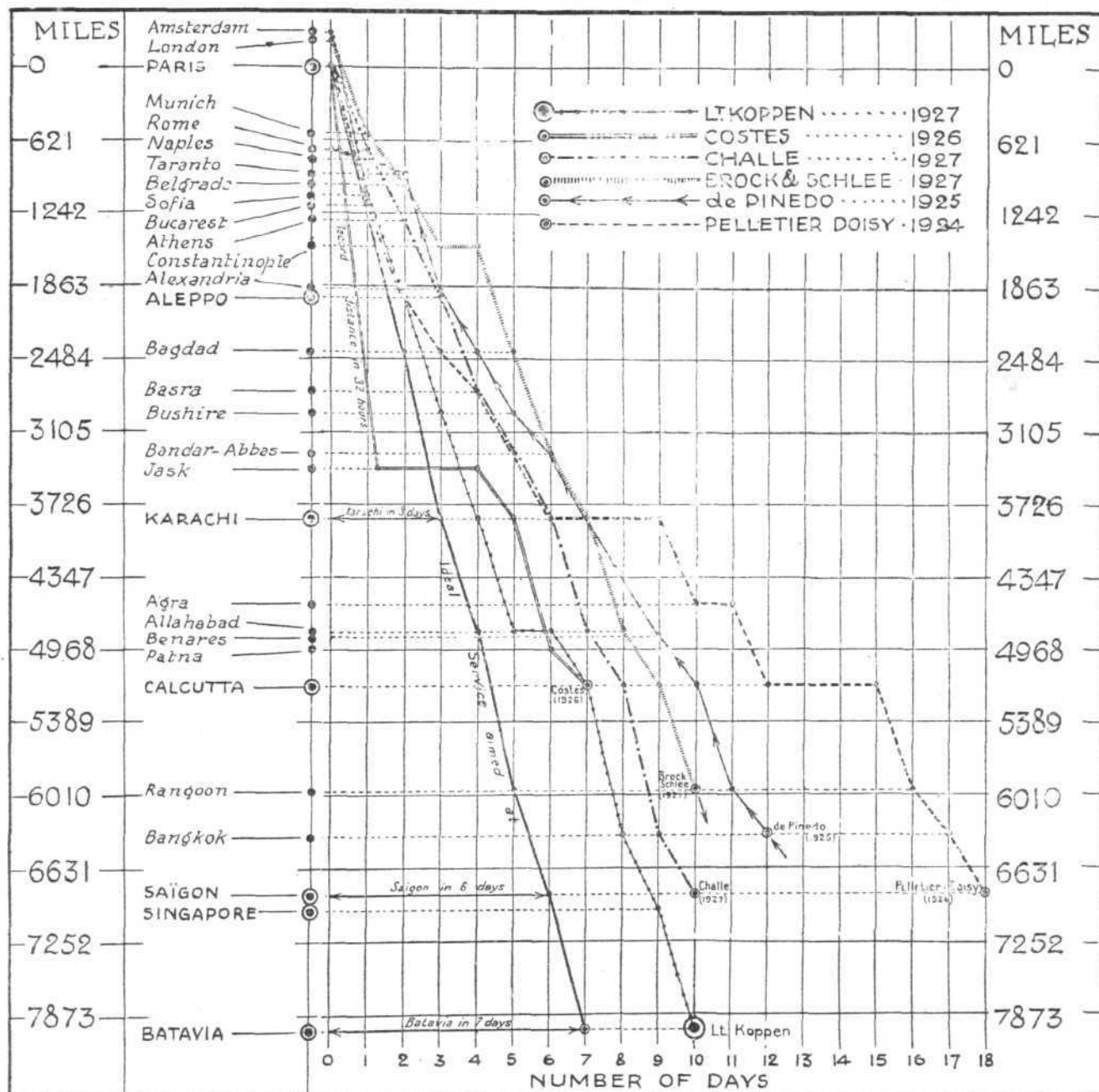
## Some Comparative Notes on the Big Flights to the East

WE have received from Armstrong Siddeley Motors, Ltd., the following interesting notes comparing certain of the big flights that have been accomplished at various times between Europe and the East. These notes are supplemented by a graph, prepared from one which recently appeared in our contemporary *L'Illustration*, and which shows at a glance the performances put up by various pilots during the last four years.

With the great obstacle of the Atlantic blocking the way westward, it is perhaps natural that the flight to the East

in view of the fact that the machine carried a heavy load of mail.

The next best performance was put up by Challe who, in the same time, reached Saigon, this side of Singapore, a distance of several thousand miles short of Lt. Koppen's journey. Other historic flights on the same route are those of Brock and Schlee who reached Rangoon (6,010 miles) in just over ten days, Costes who flew over 5,000 miles in seven days, and thereby equalled Koppen's time for the first part of the journey. De Pinedo who flew a seaplane westward from



**EASTWARD HO!** The above chart gives a graphic comparison of the principal long-distance flights between Europe and the East during the last four years, of which Lieut. Koppen's stands out prominently.

has attracted the attention of European aviators on the lookout for records. The surveying of a possible air mail service is one of the principal objects of these long-distance flights, while the kudos attaching to the pilot, aeroplane and engine which makes a successful flight is another. At the moment it is particularly gratifying to know that Great Britain ranks foremost, at any rate, so far as aero engines are concerned, in this race to the East.

We refer to the record-breaking flight made by the Dutch Aviator Koppen in an Armstrong Siddeley "Lynx" engined Fokker which journeyed from Amsterdam to Batavia in Dutch East Indies in ten days and returned equally rapidly, his performance being all the more creditable

Bankok and covered some 6,300 miles in 12 days and Pelletier and Doisy who took 18 days to fly nearly 7,000 miles from Paris to Saigon.

The average speeds of the various aviators can be taken as an indication of the progress made in navigation and aero engine design. Koppen's "Lynx" engined machine averaged  $37\frac{1}{2}$  m.p.h., Challe's speed was  $32\frac{1}{2}$  m.p.h., while that of Pelletier and Doisy in 1924 was only  $17\frac{1}{2}$  m.p.h. Even this last performance compares favourably with the speed of the mail boat which journey only averages some  $12\frac{1}{2}$  m.p.h.

The aeroplane speeds naturally appear low because the aeroplane only flies by day, and the time spent in resting at night is not deducted when working out the averages.



# AIRISMS

## FROM THE FOUR Winds.

### Great Flying-Boat Cruise

THE four R.A.F. "Southampton" flying-boats left Mangalore, Madras, on December 29 and arrived at Cochin, Southern India, in the afternoon. On December 31 they reached Colombo, Ceylon.

### Latest Atlantic Mystery

THE probable solution of the fate of Mrs. F. Grayson and her companions in the Sikorsky amphibian, "The Dawn," is furnished by a statement by Capt. Comeau, of the sailing vessel, "Rose Anne Belliveau." On the evening of December 23 his attention was drawn to the muffled roar of an engine near his ship which became louder and then stopped. Next a loud splash was heard as of a heavy body dropping into the seas, which were mountainous. The captain declared that it was impossible for anything but a sea-going vessel to live in the seas at the time. This account coincides with a wireless message intercepted by another vessel, which stated "Plane down." It is thought that the pilot of "The Dawn," attempted to land alongside the "Rose Anne Belliveau" and his machine immediately sank.

### Lost Air Liner Found

AN Imperial Airways air liner on the Cairo to Baghdad service made a forced landing in the desert 200 miles west of Baghdad, on December 29, owing to petrol shortage and was missing for some time. Many machines, including those of the Air Force, made continuous searches in the desert and it was found eventually by Capt. Warner, an Imperial Airways pilot, who had been flying all night. It was surrounded by Arabs who were very friendly and had assisted the pilot, Mr. D. Travers, and his passengers, among whom was Mrs. Warner, wife of Capt. Warner. Sufficient petrol was transferred to the stranded machine to enable it to reach Rutba post, while the passengers and mails were conveyed to Baghdad in Capt. Warner's machine. Wireless messages from the lost machine were not picked up owing to jamming caused by messages sent out between stations enquiring for information.

### Sydney-Wellington Flight Hitch

THE proposed flight of Lieut. Moncrieff and Capt. Knight from Sydney to Wellington, in a Ryan monoplane, is receiving certain official disfavour both in Australia and New Zealand owing to the type of machine adopted. Australia has placed a ban on long distance sea flights in machines other than flying-boats. Apparently the two airmen were assured by Mr. Coates, the Prime Minister of New Zealand, of Australia's agreement to the flight taking place in a Ryan monoplane in this instance, and on the strength of this, the machine was purchased. It had been passed by the N.Z. Government, and the Director of the N.Z. Air Services, Maj. Wilks, had offered to participate in the venture. It is now stated that the Commonwealth will allow the flight to proceed, in spite of its official disapproval.

### Atlantic Hero's South American Tour

COL. C. LINDBERGH left Mexico City on December 28 in his monoplane, "Spirit of St. Louis," for a flight of 650 miles to Guatemala City. For fifty miles he was escorted by seven Mexican Army aeroplanes. His course led between mountains and over barren tablelands as well as jungle which offered no landing grounds for emergencies. He reached his destination safely the same day. Mrs. Lindbergh, also left Mexico City that day to return to the United States. Col. Lindbergh arrived at San Salvador on January 1, from Belize, British Honduras, in less time than expected. The next lap will be over regions where fighting is taking place between rebels and the U.S. Marines, and he has been warned to fly very high or make a detour.

### The Paris-Hanoi Flight

THIS French attempt to fly to Hanoi in five days from Paris has met with unexpected incident. When Col. Antoinat and his companions left Rome in the "Georges Guynemer" a storm caused them to drift over the Mediterranean and the pilot fainted owing to the intense cold. The conditions made a landing at Athens impossible and the machine finally came down at Adalia, Asia Minor, with the petrol supply exhausted. The Turks arrested Col. Antoinat under the pretext that he

had flown over Smyrna, but he and his crew were released after strong protests. Then, in spite of a gale, they decided to resume the flight and a landing was made at Mersina where armed peasants attacked and refused them refreshment. With great difficulty the Colonel induced his antagonists to let them go at a moment when they and their machine were in danger of being burnt by the peasants. The flight was continued early on Christmas morning with the crew in a lamentable condition. Alexandretta was reached, the petrol replenished, and the journey made to Rajak. A ministerial order is now keeping him there so the real purpose of the flight will not be possible to accomplish.

### New French Mission

UNDER the command of Commandant Gama, a French mission, which will include M. Proust, Deputy for Indre-et-Loire, is to make an air tour of French West and Equatorial Africa. For this purpose three Breguet machines left Le Bourget on December 29 and reached Lyons. They next started for Perpignan but one was forced to land at Narbonne, another had to return to Lyons and the third managed the stage.

### French S. American Tour

CAPT. COSTES and Lieut. Le Brix flew from La Paz, Bolivia, to Lima, Peru, on December 29.

### New French Air Services

M. HENRY FARMAN proposes to extend his air services. He will inaugurate a 12-hour night line between Paris and Rome and Paris and Casablanca; also a rapid night line between Paris and Berlin. The French C.I.N.A. are contemplating extending its Constantinople line to Cairo soon. The French Eastern Air Line is anxious to expand its lines across Syria and British India to China.

### The Australian Flight

CAPT. LANCASTER and Mrs. Keith Miller left Rangoon in their Avro "Avian" "Red Rose" on January 2 for Tavoy. On the way a snake suddenly appeared in the cockpit, which the pilot tried to kill by stamping upon it but missed. Mrs. Keith Miller then attacked it in her cockpit with the spare joy-stick and battered it to death. It is thought that the intruder entered when the machine was on the race-course at Rangoon.

### The African Survey Flight Progress

SIR ALAN COBHAM hopes to leave Malta next week for Africa in the Short "Singapore" flying-boat, which is now nearly repaired. The new wing is already in position.

### Aeroplanes' Rescue Work

SERIOUS floods are reported from Morocco and aeroplanes are maintaining communications between Rabat and Suk-el-Arba. They are also surveying the flooded areas and conveying food to isolated centres, as well as directing relief boats to places where the inhabitants are in danger of drowning.

### A Return Flight to the Moon Without Accident!

HALF A MILLION MILES flown without accident to passengers or pilots have been completed by Australian Aerial Services, Ltd., up to November 16 last. This distance is equivalent to a return flight to the moon, and the A.A.S. claims the distinction of being the first aerial mail service in the British Empire to fly this distance without an accident. During this period 7,806 passengers have been carried over single stages of the company's services. Whilst in the employ of Australian Aerial Services, Ltd., Pilot S. E. Sutcliffe has flown approximately 120,000 miles, and Chief Pilot F. S. Briggs 100,000 miles. The company, which inaugurated the Riverina Aerial Services in June, 1924, with a fleet of three machines, now controls 11 aircraft with seating capacities ranging from two to seven persons. They operate passenger and mail services between Melbourne and Hay, Cootamundra-Hay-Mildura and Adelaide, and Mildura-Broken Hill.

### Pilot Governor Trumbull

CONNECTICUT's chief executive Governor, Trumbull by name, who has been a keen advocate of air transport, has put his preaching into practice. He recently completed a course of flying instruction from Interstate Airways, Inc., and was granted his pilot's certificate!



## AIRSHIP DEVELOPMENT

On Friday, December 16, Capt. C. F. M. Chambers, D.S.C., S.M.A.E., delivered a highly-informative and interesting lecture on Airship Development before the Society of Model Aeronautical Engineers at the Y.M.C.A., Tottenham Court Road.

Commencing from the earliest efforts of the brothers Robert, in France, in 1784, he narrated how their first ship (which was built to the order of the Duke of Chartres) ascended very successfully. But no gas blow-off valve had been fitted, and consequently the envelope was on the point of bursting when, with great presence of mind, the Duke bayoneted the fabric with one of the spare landing stakes, and so they came down in the park of Meudon, near St. Cloud.

The French revolution occurred nine years later, and it is to be hoped that the Duke managed to escape the guillotine with the same skill as he had previously shown in avoiding a bad landing!

Since that time, however, nothing of importance was done until the end of the 19th century, when Santos Dumont evolved a number of ships for pleasure purposes. Capt. Chambers then traced through the evolution of the Zeppelin, and showed up its strong and more particularly its weak points.

His chief criticism was that the system of suspending power eggs—cars—and perhaps (as in the case of an aircraft carrier) aeroplanes—as a number of vibrating pendulum weights, is not a sound engineering job. Particularly so, when the machine is turning in the air.

He also went through the evolution of the non-rigid ships—finishing as they did in this country with the highly-successful ships of the Coastal Star and North Sea types, and the S.S. or "Blimp."

The evolution of the semi-rigid was then detailed out—the beginning being the Parseval, in 1916—a German ship and a very creditable piece of work. It seems as though we might have had a service of Parsevals running between Berlin and London by now, had not the peace treaty held up the German designers.

This presented an admirable opportunity to outside enterprise, and the Italians therefore commenced their successful programme of semi-rigids, among which is the "Norge." An account was then given of the famous flight to the North Pole and back, under command of Capt. Amundsen, and also of other famous airship flights, including the east and west crossing of the Atlantic by R.34, under Major Scott, in 1919.

The question of the safety of airships was then gone into, and Capt. Chambers gave short summaries of the accidents to R. 38, Shenandoah, and Dixmude, as given by the various Courts of inquiry. He showed that in each case these were not commercial ships, but were built for special fighting purposes, and under the influence of design of the war period.

Commercial airships of the future will have a much higher factor of safety, and design is being revolutionised.

The actual casualties of various forms of transit were next gone into, and some very interesting figures for 1926 were given, as follows, which show that the air is by no means as dangerous as is generally supposed, but rather to the contrary.

From the Home Office:—Street casualties, 1926 (all road vehicles): Killed and injured, 138,774.

From B.O.T. Returns, 1926:—(On British registered ships): Deaths from disease and injury, etc., to passengers and crew, 2,229.

From Ministry of Transport, 1926:—(On British Railways): Killed and injured, 23,807.

From Air Ministry Department of Civil Aviation:—

Year.	Accidents.	Killed.	Injured.	Total.	Miles Flown.
1919	1	1	2	3	104,000
1920	1	2	2	4	644,000
1921	—	—	—	—	225,000
1922	—	—	1	1	717,000
1923	1	3	—	3	943,000
1924	1	7	—	7	936,000
1925	—	—	—	—	862,000
1926	—	—	—	—	840,000
1927*	—	—	—	—	485,000
	4	13	5	18	5,756,000

\* End of August.

On these figures—

The percentage of casualties per million miles travelled per train on railways is 62.9 and the corresponding figure for the air is 3.14. He did not deduce, however, from this that air transport is safer than any other—but he pointed out this salient fact: That railways have been in operation in this country for over 100 years, and the percentage of casualties suffered is likely by now to be a stable quantity. Aircraft for commercial purposes has not been in use for 10 years and, as the tables show, the casualties are dropping, while the mileage is steadily increasing, and it is reasonable to assume that as time goes on the air will prove safer than it is today.

So much, then, for the history of the airship, and getting down to its commercial possibilities, Capt. Chambers answered the question as to whether or no the airship is a business proposition, and introduced at this point the designs for B.S.R.I., which is the first semi-rigid to be built for British Airships, Ltd. This coming machine is already familiar to readers of *FLIGHT*, and after describing all the main technical features, the lecturer showed that the performance and paying load would be much better than an airliner of approximately the same cost.

One example given was the Imperial Air liner "Argosy," costing £22,500. It was found that B.S.R.I., costing £25,000, would have a capacity anything between five and nine times as large. He therefore deduced that the small semi-rigid of 1,000,000 cub. ft. displacement, was essentially a useful unit, and in the great air routes of the future from this country to America—or to Australia—would be used in conjunction with the aeroplane and the big rigid, at any rate for a start.

He prophesied that 1928 will be essentially an airship year—and in conclusion he pointed out that whether or no the airship in its present form is the solution of the air transport problem, it is at all events going to have its day. He then spoke on the great possibilities of the flying wing, and is inclined to the opinion that we shall in the long run arrive at this as a final solution of the best form of air transit.

shares applied for. At the beginning of the new year a prospectus will be issued.

### Preparing the Way

A SOUTH AFRICAN report states that early in 1929 flights will be carried out between England and South Africa to test the possibility of an airship service.

### Irish Civil Aviation

A REPORT states that the Free State Government proposes to establish a Department of Civil Aviation of which Col. Charles Russell, formerly in command of the Free State Air Force, will be in charge. Steps may be taken with the collaboration of Imperial Airways to arrange air services between England and the Free State.

### New London Air Lines

AN air service between London and Cannes will begin on March 1, when passengers will be able to leave Croydon at 8 a.m. and reach Cannes at 4 p.m. In the summer of this year the air lines between London and Cologne will be doubled, for in addition to the established services a Belgian line will operate over the same route.

### A New Zeppelin

THE new Zeppelin, L.Z.127, which has been under construction for the past year at Friedrichshafen, will probably be ready next summer. This will be the largest airship ever produced by Germany, and capable of a 6,250 miles' range in 100 hours' flying. The engine power will be five 530 h.p. Maybach's, the passengers will number 20, and the crew 26. The intended maiden flight of the ship will be a voyage round the world with Dr. Eckener, technical director of the Zeppelin Company, in command. If the trials are successful the ship will be flown on a passenger service between Spain and South America, organised by a Spanish-Argentine company.

### New Club Changes its Name

THE East Kent Flying Club has changed its name to the picturesque title of Cinque Ports Flying Club in honour of the Rt. Hon. Earl Beauchamp, K.G., P.C., K.C.M.G., T.D., Warden of the Cinque Ports, who has kindly consented to become the president. He has generously contributed £100 towards the purchase of shares in the company now being formed, which, up to date, has over £200 worth of

## AERIAL SURVEY MAKES GOOD

### A Busy Time Promised for the New Year

ALTHOUGH an unsubsidised branch of the Aircraft Industry aerial survey and photography, with both home and foreign concerns, has for some time past been steadily paying its way, Not only so, but it seems that business in this direction is increasing fairly considerably, while further developments in the future—when the full possibilities and advantages of aerial survey become to be even more widely appreciated—give promise of still greater activity.

In the last issue of FLIGHT for 1927, brief reference was made to a new contract secured by the Aircraft Operating Co., Ltd., in Iraq, and now we are able to give further details of this contract, and also of another contract secured by the same company in Africa. We are also able to give some particulars of the survey work of another British firm engaged in this capacity—the Air Survey Co., Ltd.

The Aircraft Operating Co.'s Iraq contract comprises an air survey of some 1,000 square miles of territory, adjacent to Baghdad, and work will be carried out in the late spring of this year. Under this contract, they are to make a mosaic of the area on a scale of 6½ in. to the mile, and also prepare maps from the photographs on a similar scale. This survey is being carried out for the purpose of pump irrigation.

In order to carry out this work, the Aircraft Operating Co., are equipping another expedition, and it is anticipated that this contract will be followed by several others in the neighbourhood—just in the same way as further contracts followed the one in Rhodesia as a result of the work they have carried out for the Rhodesian Congo Border Concession, Ltd.

Up to now, the Aircraft Operating Co. have concentrated on work in Africa, but the securing of this new contract is the first step in the policy for extending the company's air survey work to India and the East, where a very large field for development awaits the air surveyor.

The Iraq survey is of particular interest, because of the many developments which are taking place in that country, and recently important oil-field development work has been carried out there. The air survey operations which are to be carried out may possibly yield information of archaeological interest, as already the Royal Air Force have taken aerial photographs in the Near East, giving most valuable archaeological information.

The southern part of the area to be surveyed is bounded on the west side by the River Tigris; this river runs across the central portion of the area, and then forms the eastern boundary of the proposed survey.

In Rhodesia, the Aircraft Operating Co. are just on the point of completing the contract for The Rhodesian Congo Border Concession, Ltd., and are undertaking an air survey of the Zambesi River for the Government of Northern Rhodesia, and also taking aerial photographs of Livingstone, Lusaka and Broken Hill for town planning purposes. An extension of the Zambesi survey along the Lungwebungen River in Angolia will be carried out for the Benguela Railway Co., while a contract has also been secured to take aerial photographs of part of the boundary between Northern Rhodesia and the Belgian Congo for the Boundary Commission.

Finally, a new contract secured is with the Government of Northern Rhodesia, under which maps are to be prepared of some 12,000 square miles of unmapped territory from photographs which the Aircraft Operating Co. have already taken.

Turning now to the work carried out by the Air Survey Co., Ltd., in India, the first Air Survey in India was that of 1,400

square miles of the Irrawaddy Delta, which was carried out by Mr. R. C. Kemp in the season of 1923-24.

Since that date numerous large contracts have been completed by the Air Survey Co., Ltd., of which Mr. Kemp is the managing director, and Col. C. H. D. Ryder, C.B., C.I.E., D.S.O. (ex-Surveyor-General of India) is the chairman.

It is interesting to note that this company has been responsible for all the commercial air surveys which have been carried out in India and throughout the East and that they have been continuously engaged on this work since 1924.

Up to the present time the work has been confined for the most part to thickly wooded or swamp districts where the difficulties confronting the ground surveyor are enormous and the wealth of detail on the photographs affords great assistance to the Forest Officers in the compilation of Stock Maps.

In the early part of 1927 when a field party of the Air Survey Company were engaged on work in the Chittagong district of Bengal, an experiment was carried out with a view to ascertaining how far the requirements of Settlement Mapping could be fulfilled. A test area was photographed, and it was found that satisfactory maps to the scale of 16 in. to the mile could be compiled from these.

As a result of this experiment a contract has been recently concluded between the Director of Land Records and Survey, Bengal, and the Air Survey Co., Ltd., for the survey and mapping on this scale of the entire Malda district, which has an area of 1,600 square miles.

To obtain the high degree of accuracy which is essential for this class of work the latest developments of the radial method of plotting will be employed in conjunction with a close network of control points. The country consists for the most part of paddy fields and the boundaries of these can be clearly seen on the photographs.

Approximately, 1,680 control points are being established by the ground party, and as often as possible they will be located at the junction of the aisles of the fields. They will be marked by digging four trenches, 2 ft. 6 in. wide by 10 ft. in length, in the form of a cross, the earth being banked up on the East and South sides to ensure that a shadow will be thrown over them during the morning hours when most of the flying takes place.

It is expected that in subsequent work of this nature such a close network of control will not be necessary, but in easily accessible country it is sometimes justified by reason of the less complicated and quicker methods that may be employed in the process of plotting-map detail from the photographs.

The company's field party will be based on Mathrapur where an excellent aerodrome has been prepared by the removal of a few trees. Temporary buildings will be erected for the accommodation of the D.H.9 aircraft and for the field darkroom.

The latest type of Eagle Air Camera will be used, while the main darkrooms and mapping offices will be equipped with the new Williamson enlarger and rectifier.

The importance of this work can be scarcely exaggerated, and it is likely to have far-reaching effects on the future of air surveys in the East, and in fact throughout the world.

The Air Survey Co., Ltd., are already negotiating for similar work over much larger areas, and this, together with their well-established business in lower scale surveys is likely to provide them with work for many years.

#### Hunt Ball at Aerodrome

THE Prince of Wales and the Duke and Duchess of York attended at the annual West Norfolk Hunt Ball which was held on December 28 at the R.A.F. Aerodrome, Bircham Newton, by permission of Wing Commander T. H. O'Brien Hubbard. Dancing took place in the pupils' lecture-room and the officers' lounge was used as a sitting-out room.

#### A Bristol Triumph Too

THE altitude record of 38,804·3 ft. set up by Commendator Donati on December 21, reflects great credit on the Bristol Aeroplane Co., Ltd., for the engine the pilot used was a Series IV high compression Bristol "Jupiter." He reached 3,000 m. in 4 mins., 5,000 m. in 9 mins., 10,000 m. in 27 mins., and 11,827 m. in 42 mins. Castor-oil was chosen for the attempt, and also extra light benzine of aviation type. Signor Nicola Romeo of Messrs. Nicola Romeo and Co., Italy, stated

in his congratulatory letter to the Bristol Company, "I feel once more obliged to express my sincere admiration, as an old builder for the engine you have so genially planned, and I hope I shall again have the opportunity of communicating to you many other successes obtained with the same machine. Please accept my renewed congratulations."

#### Utilising the Aeroplane

CAPT. W. L. HOPE has been delivering food by air to stranded villages during the recent spell of severe weather. De Havilland machines left Stag Lane carrying all sorts of food which was dropped by parachute, as the snowbound country made landings impossible. The services from Croydon were held up and so was the departure of the Far-East flight of Flying Officers Vincent and Newall in their D.H.9a's. For their Cairo stage, Mrs. Wise Parker will travel as passenger.



# THE ROYAL AIR FORCE

## ROYAL AIR FORCE INTELLIGENCE

### General Duties Branch

*Group Captain* A. Fletcher, C.M.G., C.B.E., M.C., to No. 21 Group H.Q., West Drayton, on appointment as Air Officer Commanding, 27.9.27.

*Squadron Leaders*: L. H. Slatter, O.B.E., D.S.O., D.F.C., to Superintendent of R.A.F. Reserve, Hendon, 25.1.28. E. D. Atkinson, D.F.C., A.F.C., to R.A.F. Depot, Uxbridge, 2.1.28. L. F. Forbes, M.C., to No. 2 Armoured Car Co., Palestine, 16.12.27. R. S. Lucy, A.F.C., to No. 10 Sqdn., Upper Heyford, 10.1.28.

*Flight-Lieutenants*: J. I. T. Jones, D.S.O., M.C., D.F.C., M.M., to R.A.F. Depot, Uxbridge, 3.12.27. R. Jones, to R.A.F. Depot, Uxbridge, 24.11.27. A. J. Elliott, to Air Ministry (Department of the Air Member for Supply and Research), 1.1.28.

*Flying Officers*: A. S. Lewis, to R.A.F. Depot, Uxbridge, 24.11.27. T. B. Fenwick, to No. 503 (b) Sqdn., Waddington, 15.12.27. (Hon. Fit.-Lt.) G. M. E. Gifford, to H.Q., Coastal Area, 2.1.28. G. B. Collot, to Elec. & Wireless Sch., Flowerdown, 3.1.28.

*Pilot Officers*: W. B. Causer, to R.A.F. Depot, Uxbridge, 29.11.27. H. R. R.

Ackerley, S. O. Bufton, P. H. E. Grisewood, D. B. McGill and G. Wood, to R.A.F. Depot, Uxbridge, on appointment to Short Service Commissions, 16.12.27.

### Stores Branch

*Squadron Leader* A. W. Turner, D.C.M., to No. 4 Stores Depot, Ruislip, 3.12.27.

*Flight-Lieutenant* T. S. James, to No. 2 Stores Depot, Altrincham, 19.12.27.

### Accountant Branch

*Flight-Lieutenant* A. J. Moore, to R.A.F. Depot, Uxbridge, 3.12.27.

### Medical Branch

*Flight-Lieutenants*: G. J. Griffiths, to R.A.F. Station, Bicester, 28.12.27. D. B. Smith, M.B., to Station H.Q. and Storage Section, Andover, 28.12.27.

### Naval Appointments

The following appointments were made by the Admiralty on December 28, 1927:—

*Lieut. (Flying Officer, R.A.F.)*—J. N. Sparks, to *Excellent*, for long (G.) course (Jan. 5), attachment to R.A.F. terminated.

## NEW YEAR HONOURS

Included in the list of New Year Honours issued on January 1, are the following:—

### Knight

Thomas Ernest Stanton, Esq., C.B.E., F.R.S., D.Sc., Superintendent, Engineering Department, National Physical Laboratory.

### Order of the Bath

*C.B. (Military Division)*

Air Commodore Hugh Caswall Tremeneere Dowding, C.M.G., R.A.F.

### Order of the British Empire

*D.B.E. (Civil)*

Mary du Caurroy, Duchess of Bedford, R.R.C., F.L.S.—For public services. The Duchess of Bedford takes a keen interest in aviation. Last August she flew 3,500 miles in eight days.

### NEW YEAR AWARDS

The Air Ministry announces:—

The King has been graciously pleased to approve of the following awards to the undermentioned officers and airmen of the Royal Air Force:—

### Air Force Cross

*Flight Lieutenant* Charles Roderick Carr, D.F.C.

*Flight Lieutenant* Robert Linton Ragg.

### Air Force Medal

127878 *Flight Sergeant (Pilot)* Francis Hubert Pelham Simpson, M.M.  
335127 *Sergeant (Pilot)* David Kinnear.

### HALF YEARLY PROMOTION LIST

The Air Ministry announces:—

The undermentioned promotions are made with effect from January 1, 1928:—

### General Duties Branch

*Group Captains to be Air Commodores*: Andrew George Board, C.M.G., D.S.O.; John Adrian Chamier, C.B., C.M.G., D.S.O., O.B.E.

*Wing Commanders to be Group Captains*: Henry Le Marchant Brock, D.S.O.; Napier John Gill, C.B.E., M.C.; Joseph Herbert Arthur Landon, D.S.O., O.B.E.; James Bevan Bowen, O.B.E.

*Squadron Leaders to be Wing Commanders*: John Valentine Steel, O.B.E.; John Arthur Gerald De Courcy, M.C.; Alexander Francis Anderson Hooper, O.B.E.; Robert Peel Wilcock; Edward Arthur Beckton Rice, M.C.; Thomas Edward Barham Howe, A.F.C.

*Flight Lieutenants to be Squadron Leaders*: Horace George Bowen, M.B.E.; Sturley Philip Simpson, M.C.; Geoffrey Hornblower Cock, M.C.; Arthur Gordon Jones-Williams, M.C.; Tilden Christmas Thomson; Franz Workman, M.C.; Victor Reginald Scriven, A.F.C.; Hugh Leedham; Philip Hildersley Cummings, D.F.C.

*Flying Officers to be Flight Lieutenants*: Robert John Montgomery-Moore; Frank Woolley, D.F.C.; James Charles Belford; Eric Charles Delamain, M.C.; Charles Alexander Cornelius Fidler, D.C.M.; Walter Reginald Day; Robin Howard Haworth-Booth, D.F.C.; William Henry Golder, D.S.M.; Claude McClean Vincent, D.F.C.; William Labat Payne; John Leslie Wingate; Edward Enos Arnold, D.F.C.; Victor Hugh Clift; Alfred Harold Love; Narbrough Hughes D'Aeth; Cecil George Hancock; Dennis Caldwell Prance; Cuthbert John Collingwood; Bertram William Trelawney Hare; George Anthony Fielding Bucknall; John Simon Leslie Adams; Gilbert Harcourt Smith; Eric Scott Burns; Arthur Francis Scroggs; Henry Adelbert Anson; Stuart Douglas Scott; Robert Henry Horniman; John Brayne Lynch; Cyril Beresford Wincott; Clift Neil Charles Dickson, A.F.C.; Robert Cecil Wansbrough; Charles Harold Brill; John Marsh Burd; M.C.; James Noel Douglas Anderson; Harry Gayton Kirkman (Hon. Flight Lt.); Archer Robert Prendergast (Hon. Flight Lt.); Vyvyan John Somerset-Thomas (Hon. Flight Lt.); Herbert Roy Bond Howell (Hon. Flight Lt.); Ernest Cecil Barlow; George Holroyd Mills; Reginald Newnam Waite; Walter Joseph Martin Akerman; Arthur Pethick Revington; Malcolm Bruce Mackay; Roland Arthur Ross Mangles; David William Frederick Bonham-Carter; Frederick George Stewart Mitchell; William Arthur Darville Brook; Colin Logan Falconer; Gerard Combe; Thomas Joseph Desmond; John Gossett Hawtrey; John Charles Eric Arnott Johnson (Hon. Flight Lt.); Percy Ivor Vincent Rippon (Hon. Flight Lt.); Leonard Young; Robert Kennedy Emerson; John Vincent Kelly; Edgar Henry Douglas Spence (Hon. Flight Lt.); Alfred Haines.

*Lieutenant, R.N., Flying Officer, R.A.F., to be Flight Lieutenant*: Edward Michael Conolly Abel-Smith.

### Stores Branch

*Squadron Leader to be Wing Commander*: Cuthbert Leopold Archbold.

*Flight Lieutenant to be Squadron Leader*: George Frederick Law.

*Flying Officers to be Flight Lieutenants*: Raymond Hugh Latham; Ernest Richard Wood; Frederick William Todd.

### Accountant Branch

*Flight Lieutenants to be Squadron Leaders*: Algernon Wynn Pendennis Phillips, O.B.E.; Charles Henry Moore.

*Flying Officers to be Flight Lieutenants*: William Joseph Heneghan; Walter William Deane; William Edward Victor Richards; Robert Cecil Clayton; Harold Edmund Cardwell, A.F.C.

### Medical Branch

*Wing Commander to be Group Captain*: Edward Cecil Clements, O.B.E.  
*Flight Lieutenant (Acting Squadron Leader) to be Honorary Wing Commander*: John Norman MacDonald.

### Princess Mary's Royal Air Force Nursing Service

*Acting Senior Sister to be Acting Matron*: Miss Janet MacLeod, A.R.R.C.  
*Sister to be Acting Senior Sister*: Miss Gladys Taylor.

## ACCOUNTANT OFFICERS, R.A.F.

THE Air Ministry announces that an examination will be held in the latter part of March, 1928, under the scheme inaugurated in 1924 for the entry into the Accountant Branch of the Royal Air Force of qualified and experienced civil accountants. About eight vacancies are likely to be available. The age limits are 22 to 26, extensible to 30 for certain candidates having previous service in the Forces.

The competition will be held in London by the Civil Service Commissioners and will include (1) an examination in book-keeping and accountancy (excluding partnership and executorship accounts), the standard being that of the final examinations of the Institute of Chartered Accountants and the Society of Incorporated Accountants and Auditors; (2) an examination in English and general knowledge (essay, précis and questions to test knowledge of matters of general interest); and (3) an interview before a selection board at which stress will be laid on accounting experience and special weight given to the type of experience provided by article service.

The emoluments of an Accountant Officer consist on the one hand of pay and on the other of accommodation, fuel, light, rations and personal attendance provided in kind. When the latter are not available, cash allowances are granted in lieu. The total of the pay and cash allowances of accountant officers range at present rates from about £400 a year for an officer on first entry to £1,135 a year for a married officer in the highest rank.

The Accountant Branch provides a permanent career. It is not of course possible to pledge the future, but so far as present foresight can show the

Branch will expand in the future and will be subject to no sudden changes affecting adversely the fortunes of its officers. The Air Force is at present a growing service and the duties thrown on the Accountant Branch are such as will, so far as can be foreseen, always be required.

Officers enter the Branch with the rank of Pilot Officer and on probation. After twelve months' satisfactory service they are confirmed in their commission and promoted to Flying Officer. Thereafter promotion is by selection. The next ranks are Flight Lieutenant and Squadron Leader and it is contemplated that officers who give satisfactory service should be promoted at least up to the latter rank, while a reasonable proportion would be able to expect promotion to the higher rank of Wing Commander and some to the rank of Group Captain. It must be understood that promotion depends on requirements and requirements on future circumstances, but the policy of the Air Ministry is directed to ensuring to Accountant Officers a career not inferior to that indicated above.

The length of the career provided depends on the rank attained. The compulsory retiring ages are for Squadron Leaders 53, for Wing Commanders 57, and for Group Captains 60; any officers not attaining the rank of Squadron Leader would be retired at the age of 50.

Application should be made to the Secretary, Air Ministry (S.7), Kingsway, London, W.C.2, for the regulations and for application forms. Completed application forms should reach the Air Ministry by February 1 next, or at latest by February 15.

## THE ROYAL AIR FORCE MEMORIAL FUND

A MEETING of the Executive Committee, the last for the year 1927, was held at Iddesleigh House, on December 14 last, at which the following Members of the Committee were present:—Lord Hugh Cecil (Chairman), Lady Leighton, Dame Helen Gwynne-Vaughan, Mrs. L. M. K. Pratt-Barlow, Sir Charles McLeod, Bart., Air Marshal Sir John Salmond, Air Vice-Marshal Sir Philip Game, Air Vice-Marshal F. R. Scarlett, Air Vice-Marshal C. A. H. Longcroft, Air Commodore E. R. Ludlow-Hewitt, Lieut.-Comdr. H. E. Perrin.

The usual list of donations and subscriptions which had been received since the last Meeting, held on October 12, 1927, was laid on the table, and in view of the extraordinarily generous donations sent to the Fund by the Air Council on behalf of the Royal Air Force share of the profits of the Royal Tournament held at Olympia in June last, and of the extremely good profits earned by the Royal Air Force Display held at Hendon in June last, the total reached a very considerable and very welcome sum, and the thanks of the Committee were forwarded by the Chairman to the Air Council for their generous help, which has now extended over a period of more than seven years.

The Hon. Treasurer was given authority to invest in Trustee Securities, a certain sum of money, and also was authorised to place to the "Reserve Account" of the Vanghugh Castle school a further sum in view of possible improvements and enlargement of the school.

A letter received at the end of November from a firm of London solicitors was read to the Committee by the Secretary, and conveyed the wish of an anonymous donor to make a large contribution to the fund in the near future, subject, of course, to the Committee submitting a suitable scheme for the use of the money, and in this regard a deputation from the Executive Committee, consisting of the Hon. Treasurer, Sir Charles McLeod, Bart., Air Vice-Marshal Sir Philip Game, Air Member of Personnel, Air Ministry, and Lieut.-Comdr. H. E. Perrin, together with the Secretary, were directed to arrange an interview with the solicitors in question, and to submit a scheme for utilising the interest on the large sum concerned towards the education of the children of officers, beginning with those who have died in the service of the country, whether at war, or in times of peace.

The Committee agreed to make a grant of £20 to the St. George's Home for Officers' Children, Old Woking, Surrey, in respect to the children of officers of the Air Force who are inmates of the home.

The Secretary reported to the Committee that Marshal of the Royal Air Force, Sir H. M. Trenchard, Bart., G.C.B., Chief of the Air Staff, had laid a wreath provided by the fund on Armistice Day at the foot of the R.A.F. War Memorial, Victoria Embankment, on behalf of the Royal Air Force and of the fund.

He likewise reported that a wreath provided by the fund was laid on the same day, and at the same hour, at the foot of the R.A.F. Bay of the Scottish National War Memorial, Edinburgh, the senior Air Officer in Scotland being present at the ceremony.

The Secretary was directed as usual to prepare an Annual Report for the year 1927.

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## De Havilland's Annual Meeting

At the annual general meeting of the De Havilland Aircraft Co., Ltd., at Stag Lane on December 30, a dividend of 10 per cent. was declared, and Mr. A. S. Butler, chairman, stated that from the year's working it had been possible to place £10,000 to the reserve account.

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## NOTICES TO AIRMEN

### Farnborough Aerodrome: Flying of Kite and Captive Balloons

PILOTS who may be flying in the vicinity of Farnborough are warned that until further notice a kite balloon and a captive balloon will be flown at intervals from the Farnborough aerodrome, up to a maximum height of 1,500 ft.

The mooring cables will be marked in the normal manner, but special care should be exercised to avoid these cables, especially in conditions of poor visibility.

### Cancellation of Notices

The following Notices to Airmen or parts of Notices are cancelled:—  
*General*.—1927.—Nos. 76, para. 4; 81; 83, para. 2; 90; 91, para. 1.  
*Note*.—No. 85 of 1927, relating to Notice to Ground Engineers No. 6 of 1927 is suspended until further notice (see N/GE. No. 9/1927).  
(No. 100 of 1927.)

**Procedure for Aircraft reporting their Passage Across the Irish Sea**  
With reference to Notice to Airmen No. 51 of 1927, the following is the telephone number and telegraphic address of the Commandant, Army Air Service, Irish Free State, Baldonnell Aerodrome:—Telephone Number: Clondalkin 22. Telegraphic Address: "Aviation Baldonnell."  
(No. 102 of 1927.)

## PERSONALS

### Married

SQUADRON LEADER JAMES MILNE ROBB, D.S.O., D.F.C., was married on December 29, 1927, at Beaulieu Abbey, to BESSIE MURRAY, youngest daughter of the late J. T. JOHNSTON and Mrs. Johnston, Pulborough.

BRIAN COURTENAY YARDE, R.A.F., youngest son of Mr. and Mrs. J. E. Yarde, of 7, Kimbolton Avenue, Bedford, was married, on December 17, at Holy Trinity Church, Bedford, to MARJORIE, elder daughter of Mr. and Mrs. SYDNEY SMITH, of 107, Bramham Road, Bedford.

### To be Married

A marriage has been arranged, and will shortly take place, between KENELM EDWARD LEE GUINNESS, of The White House, Kingston Hill, Surrey, younger son of the late Captain Benjamin Guinness and Lady Henrietta Guinness, and JOSEPHINE STRANGMAN, younger daughter of Sir Thomas and Lady Strangman, of 3, Buckingham Gate, S.W.1.

### Item

The will of the late Lieut.-Col. VINCENT NICHOLL, D.S.O., D.S.C., of The Mill House, Stoke Poges, a director of the Fairey Aviation Company, has been proved at £44,299.

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## THE WESTLAND AIRCRAFT SOCIETY

(The Yeovil Branch of the R.Ae.S. and Inst.Ae.E.)

On Friday, December 9, a most interesting lecture on "Airscrews," illustrated by lantern slides, was given to the Society by W. E. Park, Esq., Wh.Sc., A.R.C.S., A.M.I.Mech.E. (of the Airscrew Co., Ltd.) at the Mermaid Hotel. Capt. Keep took the Chair.

*Synopsis of Paper*.—The first part of the paper dealt with the scope of the subject, with reference to the standard method of construction. The problems of design were considered from the manufacturer's point of view with reference to various empirical formulae, and to the laying out of the airscrew blade from the main dimensions.

The second part of the paper dealt with the construction of the timber propeller in detail, with references to the comparative costs of the various processes and the departures from standard practice. A brief summary of special methods of construction was included.

The third part dealt with metal construction; the properties determining the choice of material, and the existing types of metal airscrews being discussed.

A long discussion followed the paper, in which Mr. Park was enabled to still further expound his views on Airscrew design and performance.

After emphasising the great improvement in design and construction which had taken place since the pioneer days, Mr. Gibson proposed a vote of thanks to the lecturer, which was heartily acclaimed by the members present.

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## PUBLICATIONS RECEIVED

*The Air Pilot Monthly Supplement*. No. 38. December, 1927. Air Ministry, Kingsway, London, W.C.2.

*All the World's Aircraft*, 1927. Edited by C. G. Grey. Founded in 1911 by Fred T. Jane. Sampson, Low, Marston and Co., Ltd., 100, Southwark Street, London, S.E.1. Price £2 2s. net.

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